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THE
COLUMBIAN DAIRY CATTLE TESTS

— AT THE —
WORLD'S FAIR, CHICAGO,
1893.

By JAMES CHEESMAN.

—
A Reprint of an Article from the
JOURNAL OF THE BRITISH DAIRY FARMERS' ASSOCIATION,
LONDON.

—
SOUTHBOROUGH, MASSACHUSETTS.
1894.

—
PRICE, 15 CENTS, OR \$10.00 PER HUNDRED.

Do You Use Salt?

It will pay you in numerous ways to use **the salt that's all salt**. This is especially true as to the butter maker. You recognize a difference in butter. We can point you out a difference in salt. You strive for the best milk, why not search for the best salt? Test, compare, ask questions. Investigate what

Diamond Crystal Dairy Salt

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A mixture of CORN GLUTEN and CORN BRAN furnishes a balanced food ration for MILCH COWS. It is rich in protein, and is a great milk producer. Stock fed with

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THE
COLUMBIAN DAIRY CATTLE TESTS

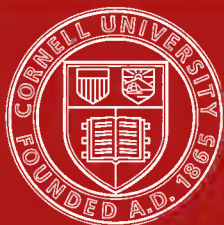
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INTRODUCTION.

BRITISH DAIRY FARMERS' ASSOCIATION,
191 FLEET STREET, LONDON, E. C.
Sept. 28, 1893.

JAMES CHEESMAN, Esq., SOUTHBOROUGH, MASS., U. S. A. :

Dear Sir, — By this mail I have the pleasure of sending you copy of the half yearly journal of the society, just issued. The next one is due in the first week of January next, and for that journal the committee are very anxious to obtain from you "A Review of American Dairy Tests," with as much information as possible, explanatory of the very great divergence between the results ascertained in America and in England. From your extensive knowledge of American dairying, such a paper from your pen would be read with very considerable interest in this country, and it will be a source of great gratification to the committee and to myself to learn that you will kindly comply with their request.

I trust also that you will be able to make the review as complete as possible, it being understood, of course, that we shall be happy to send the usual honorarium.

It would be essential that the MS. should reach me, at the very latest, by Dec. 15.

Trusting to receive a favorable response at the earliest opportunity, I remain,

Yours faithfully,

WM. C. YOUNG,
Secretary.

PRESS NOTICES.

THE BATTLE OF THE BREEDS.

A well-known authority, Mr. James Cheesman, contributes to the *Journal of the British Dairy Farmers' Association* the first succinct and yet full account of the dairy tests at Chicago last summer that has been written, and adds greatly to the value of his history by instituting, at various points therein, careful comparisons with the best work of the same kind that has been done abroad. It is curious that we must go to an English periodical for this matter, but as the author lives in Massachusetts, the United States may claim the honor of the work, after all.—*Country Gentleman*, Jan. 18, 1894.

Prof. James Cheesman, of Massachusetts, has prepared for the *Journal of the British Dairy Farmers' Association*, at the request of its editor, an exhaustive and critical review of "The Dairy Cattle Breeds Tests at the World's Columbian Exposition," advance proofs of which have been sent us. We sincerely hope this review may be re-published in full in pamphlet form in this country, and at such a nominal price that a copy of it may get into the hands of every man who is keeping cows for profit.—*Hoard's Dairyman*, Jan. 19, 1894.

Prof. James Cheesman, of Southborough, Mass., has prepared for the *Journal of the British Dairy Farmers' Association* an exhaustive review of the dairy cattle breed tests at the World's Fair. This is the first succinct and full account of this dairy work that has been written, and Prof. Cheesman has done himself much credit in his exhaustive review of the work.—*Maine Farmer*, Jan. 25, 1894.

COLUMBIAN DAIRY CATTLE TESTS.

Early in July, 1890, there met in Chicago about a score or more of representative dairymen from all parts of the United States, who organized themselves under the title of "Columbian Dairymen's Association." The object was to secure proper representation of the dairy interests in the now historic "World's Fair." The outcome of the discussions, the executive work of this body and of the cattle breeders' clubs, was the Dairy Department of the Exposition. Accepting the essence of the ideas advanced by these bodies as a base of operations, Mr. W. I. Buchanan, chief of the Department of Agriculture, set to work to evolve from the varied schemes presented for his consideration such a working exhibit as he found possible with the material at his command.

The hope of the promoters from the beginning was a complete reflection of the dairy interests as a whole; comprising a school, practical factory work every day, and a thorough test of all the rival breeds represented in the earlier discussions. These included Ayrshires, Devons, Guernseys, Holstein-Friesians, Jerseys, Red Polled, Shorthorns, and Swiss. It was expected that two or three hundred animals might be had for the six months' work, and that fifty representative cows from each breed would be placed in competition. From the first, the keenest interest was felt in this contest. Experiment station workers regarded it as their long-sought opportunity to hold the scales and keep the records; while the sporting dairymen, whose attention had long been centred on the rivalry of the Holstein-Friesians and the Jersey cattle, and their phenomenal claims, hailed the event with unbounded satisfaction. The farmer hoped that this long period of trial, under the most equitable of rules and regulations, would enable him to understand which breed would make the greatest net profit for a dollar's worth of food. As the year 1892 closed, disappointment was general when not more than three breeds, consisting of twenty-five animals in each herd, were reported for work. The absence of the Holstein-Friesian cattle at the opening of the Exposition was a great drawback from the sportsmen's point of view. As it was, the sport was considerably diminished, inasmuch as the breeds brought together had not long been known as strong

rivals. Interest had centred on the Holsteins and Jerseys, because they had been bred in this country longer than the other dairy breeds, and because they each had an immense number to choose from, and it was thought that their rivalry would awaken and sustain the widest interest.

Provision had been made in the rules for a committee, composed of four representatives of the Association of Agricultural Experiment Stations, and one representative of each breed under test. This committee was constituted as follows: Drs. Armsby and Babcock, Professors Scovell and Roberts; and Messrs. Fuller, Caldwell, and Hines, the superintendents of the Jersey, Guernsey, and Shorthorn herds in competition.

The general rules and regulations under which the test was conducted were drafted by Mr. W. I. Buchanan, chief of the Department of Agriculture, and revised and amended after several consultations with the breeders' clubs, and representative dairymen from the different States. These rules were so drawn as to admit an equal number of cows of each breed to be selected by, and entered in the names of, the breeders' clubs; so that the animals accepted by the management were thoroughly representative ones. First, provision was made for a fifteen-day cheese test, commencing on May 11, and conducted as follows:—

Animals were weighed at the opening of the test, credited with the amount of cheese made by each cow and herd, also with the amount of whey produced, and the increase of flesh, if any, during the trial. The cheese made was properly cured and submitted to the judgment of competent market men, who appraised its value in accordance with its quality and the ruling market quotations of the day. The food consumed was debited to each herd, and the differences determined their relative positions and awards.

Next in order was the ninety-day butter test. In this case, each cow and herd were credited with the yields of butter, skim-milk, and buttermilk produced; and with the increase in weight, at the end of the trial, if any, at four and a half cents per pound. The incidental water, casein, and salt of butter in its commercial form, were estimated at twenty per cent. It was agreed that eighty per cent of the actual fat found in the milk by the Babcock machine and gravimetric analysis should form the basis of the calculation for butter, without reference to the output of the churn. This simplified the laboratory work greatly. The food consumed, color used, were debited, and the bal

ance of credit determined the awards, subject to the valuation of the butters, which were all closely scored, and their salability on the Chicago market gauged on the ruling rates paid for fine farm butters.

In the thirty-day butter test, only fifteen animals of each competing breed were entered. These forty-five cows were taken from the seventy-five which had taken part in the cheese test and in the ninety-day butter test. The method of determining awards was based on butter product only; skim-milk and buttermilk were left out of account.

Matters relating to hours of milking, feeding, sampling, and the laboratory work were all under the supervision of the committee, subject to the approval of Chief W. I. Buchanan. Each superintendent was free to choose his own feeding substances, and to feed what quantities he pleased, within the general regulations as to time and other conditions imposed by the rules. All food was secured under lock in a grain room in each barn; and a Columbian guard was stationed in each barn at all hours (under the control of Mr. Buchanan) to secure proper observance of the rules. The cows were watered from automatic supply basins hung in front of the stalls. The stalls were arranged with the heads towards the walls, between which was a feeding alley; and the broad alley in the rear was used by visitors, who were admitted by permit from the superintendents. No one was allowed in the feeding alleys but the men in charge of the cattle, and they only during the feeding times.

It will be noticed that the plan of awarding the order of superiority was unlike that of every other public test which has lasted but for one or two days. In this case no account was taken of the length of time animals had been calved, nor of the other conditions usually counted in on such trials. Inasmuch as a period of four and a half consecutive months' work was contemplated by the management, and as it was the intention of the rivals to use only such animals as would be fresh at the commencement of the trial, it was held that the total one hundred and thirty-five days' work could and should be treated on a purely business basis. In this way no account was taken of the volume of milk given except for the purpose of calculating the yields of fat and skim-milk constituents. Only the actual food value of the milk constituents was estimated, and the water was thus entirely eliminated from the account.

To obtain an accurate idea of the value of the work done, and of the character of the achievement of each herd and of each individual in it, several of the conditions must be kept steadily in view. It was

necessary to have all the animals gathered on the grounds as far in advance as possible, to accustom them to their new quarters, acclimatize them, and to drop their calves in the Exposition barns. Besides this, each superintendent needed to know his cows, by watching their work under variations of food and other environment from day to day. By the May opening he wanted to know what each was capable of doing for a given ration, who were the big workers, and which the greatest net profit earners.

The Jerseys all calved on the grounds, and were there as early as December, 1892, or long enough to spend an entire working year of three hundred days in the barn before leaving. The Guernseys appeared on the scene in March, and the Shorthorns about the same time. Those only who know the climate of Chicago in winter and spring can fully appreciate just what this means. Thermometer readings will not express it. After overcoming the fatigue of, to many of the Guernsey and Jersey cows, a journey of one thousand miles or more, then getting acclimatized as best they could, with their changes of food, they settled down to their long work of nearly five months—not to make the greatest phenomenal yields, but to earn the largest net profits. In the middle of their work they quite often had to endure a temperature of one hundred degrees, and the discomforts which those figures imply.

It must, I think, be admitted that the circumstances attending this great trial—the long distances travelled, the differences of climate endured by the large majority, the length of the period, the continuous housing of the cattle so long, the business basis on which the test was founded, and the elaborate and exhaustive nature of the work done by the committee, at a cost of over \$121,000, or nearly £25,000—constitutes something so entirely different to anything that has ever been attempted before, as to be simply incomparable.

The very nearest thing that I recall elsewhere is the dairy farm competition which Lord Vernon started about eight years ago, during the year of his presidency of the British Dairy Farmers' Association. Mr. Hothersall, of Preston, was the victor; winning also the first prize from the Royal Agricultural Society at its Preston meeting in a similar contest—a very proud distinction. Lord Vernon's prize of £50 was for "the best herd of dairy cows, any breed or cross, numbering not less than twenty animals, the property of a tenant farmer renting not less than seventy-five acres." There were nine competitors. The judges were to visit the farms twice during the year, take

the yields of milk at each visit, take account of the general principles of management, the quality of the milk, examine the books of each, ascertain the net earnings for the year, and make their awards accordingly.

On the 27th of August, 1885, the judges made their second examination of Mr. Hothersall's place, and found these facts:—

Acres.	Cows in Milk.	Milk Yield.	Daily Average.	Total Solids.	Fat.
81	41	1,232 lbs.	30 lbs.	13.39	4.02

I cannot find the breed or size of the animals, but the showing is good. The milk was sold in Preston. In this list of eight rivals, the largest area was 547 acres, and the smallest, 80; the largest number of cows, 60; and the smallest, 24. The highest quality of milk was the above, and the poorest, 12.56 solids, of which 3.28 per cent was fat.

All the cow tests at the annual Dairy Shows in October have been for a limited period of forty-eight hours. The last published table of averages in my possession, for the three breeds, for four milkings, at the October Show in London, for a series of eight years was:—

<i>Guernseys.</i>					
	Total Cows.		Milk.	Solids.	Fat.
1879 to 1886	. . 29	Day's yield	26.80	13.98	4.64
<i>Jerseys.</i>					
1879 to 1886	. . 56	Day's yield	28.11	13.86	4.31
<i>Shorthorns.</i>					
1879 to 1886	. 73	Day's yield	42.80	12.60	3.69

Added to this, I may take the performance of the October Dairy Show, 1892, at the Agricultural Hall, London.

AVERAGE YIELDS.

Breed.	Milks — Lbs. per Day.	Totals Solids.	Fat.	Average Weight of Cow.
7 Shorthorns	49.8	12.67	3.80	1,451 lbs
10 Jerseys	27.6	14.74	5.51	829 "
4 Guernseys	29.4	13.95	4.91	1,044 "
1 Dutch	61.8	12.85	3.86	1,532 "
2 Ayrshires	40.5	13.64	4.22	1,054 "
5 Keries	25.5	13.42	4.37	721 "
1 Red Polled	27.7	13.47	4.33	1,121 "
1 Aberdeen-Angus	60.3	13.74	4.99	1,312 "
2 Cross bred Dutch	59.9	12.29	3.77	1,267 "

DAIRY SHOW, 1893, MILKING TRIALS.

Shorthorns.

Cows. Age—Yrs.	No. of Calves.	Days Calved.	Day's Milk. Lbs.	Total Solids.	Fat.	Award.
6½	6	19	60.7	12.75	3.56	Champion Cup.
5	5	24	65.4	11.77	3.39	Second Prize.
8	5	43	57.5	12.69	3.49	Third Prize.
6	—	12	48.7	14.04	4.56	Reserve.

Jerseys.

6½	6	131	33.2	17.25	7.29	Champion Cup.
7¾	—	126	37.9	13.66	4.10	Second Prize.
3¾	2	—	33.7	16.29	6.51	Third Prize.
5	4	53	32.7	15.58	6.34	Reserve.

Guernseys.

8¼	—	59	47.7	13.16	4.21	Champion Cup.
6½	—	171	36.7	14.09	4.76	Reserve.

Cross or Mixed Breeds.

9	7	10	77.2	14.00	4.24	Champion Cup.
10	8	85	47.4	11.73	3.30	Second Prize.

ENGLISH JERSEY CATTLE SOCIETY'S BUTTER TEST.

Cows. Age—Yrs.	No of Calves.	Days Calved.	Lbs. Ozs.		Butter Churned. Lbs. Ozs.		Milk Ratio to 1 lb. Butter.	Award.
6½	6	132	32	8	2	8	13	Gold Medal and £3.
3¾	2	—	34	8	2	4	15.33	Silver Medal and £3.
6¾	—	63	32	0	2	2	15.05	Bronze Medal and £3.
5	4	54	33	0	1	13¾	17.74	Certificate of Merit.

Averages for Sixteen.

	72	26	1	8½	ozs.
Totals		430½	24	10¼	“

The winner (Chesnut 2nd) of the Champion Cup and Gold Medal is a remarkable cow, having won a gold medal before. Her dam, Chesnut, won a silver medal in 1886, and her great-granddam won the gold medal in the Royal Counties' Show, 1887. This exhibit shows marked individuality of character, and the value of the maxim, “Breed from winners.”

Prizes were offered for the first time this year for a

SHORTHORN BUTTER TEST.

Six cows produced in one day as follows :—

Average Age.	Day's Milk Yield.	Butter Churned.
6½ years	271 lbs.	9 lbs. 10½ ozs.
Average per cow	45 "	1 lb. 9½ "

	Years.	Days Milked.	Milk Yield.	Butter.
First Prize	6	24	58	2 lbs. 8½ ozs.
Second Prize	6	20	60	2 " 1½ "
Reserve	8	43	58	1 lb. 12¼ "

With this immense mass of fact relating to your Association's effort in bringing to light the best work in England, what do we learn? Just what we have at Chicago—that individuality is the greatest factor in all animal performances, whether in the barn or on the turf. The same principle is vital among men. Among our most successful breeders individual merit first has long been practised. Without it, family credentials covering a thousand years would be held of little value. This was the "guiding star" which helped the late Mr. Philip Dauncey to give us that inimitable family of Rioter-Stoke-Pogis Jerseys which were the result of his sixty years of breeding. Mr. Salisbury Baxendale has shown the same discrimination in his selection of Jerseys like "Chesnut 2nd," and the Shorthorn "Semolina."

Let us now examine the Chicago work of the fifteen-day cheese test, the ninety-day butter test, and the thirty-day test, together with the sweepstakes awards.

THE FIFTEEN-DAY CHEESE TEST.

From May 11 to May 25, inclusive, the seventy-five cows in the dairy barns at Jackson Park were tested for cheese. The result has been figured out, tabulating the material facts of the test, arranging the cows in the rank which they assume under the rules as indicated by the net profit they show for the fifteen days.

The cows were charged with the food they ate, and credited with their yield of cheese, the value of the whey, and the gain in live weight. The difference between the total value of their products and the cost of their food is the net profit, and the awards go to the cows and the

herd which show "the greatest net profit." When the net profits were equal the award was given to the cow which "yields the profit at the least cost."

There were five awards, based on net profit — (a) for an individual cow in each breed; (b) for an individual cow in each breed; (c) for five cows in each breed; (d) for five cows in any breed; (e) for the herd.

The Jersey won the award for the best cow in any breed, and the best herd, but a Shorthorn stands fifth among the best five cows of any breed.

The best Jersey cow and best in any breed was "Ida Marigold"; the best Shorthorn cow was "Nora"; the best Guernsey cow was "Sweet Ada."

The best five Jersey cows were "Ida Marigold," "Merry Maiden," "Lily Martin," "Signal Queen," and "Baroness Argyle."

The best five Shorthorn cows were "Nora," "Betsey 7th," "Genevieve," "Kitty Clay 7th," and "Bashful 2nd."

The five best Guernsey cows were "Sweet Ada," "Amanda," "Materna," "Select 8th," and "Rosette 5th."

The best five cows in the test were the Jerseys, "Ida Marigold," "Merry Maiden," "Lily Martin," and "Signal Queen," and the Shorthorn "Nora."

The milk for five days was spoiled for cheese-making, so that cheese was actually made only ten days. The yields for the other days have been estimated from the amount of total solids in the milk. This estimation has been proved to be very close. The score for the ten days is herewith submitted. The standard by which the judges worked was as follows: Flavor, 55; texture, 25; keeping quality, 15; color, 5; total, 100. For the ten days the Jersey scores average thus: Flavor, 49.8; texture, 23.2; keeping quality, 13.5; color, 4.2; total, 90.7. The Guernsey scores average thus: Flavor, 48.9; texture, 21.8; keeping qualities, 12.3; color, 4.2; total, 87.2. The Shorthorn score, average thus: Flavor, 50.4; texture, 22.3; keeping qualities, 13.4; color, 4.4; total, 90.5. Cheese is rated in price according to its score, and ranges from ten to fourteen cents. The price for each day's cheese is shown in the table.

In addition to showing the account with each of the seventy-five cows, we give the tabulated facts of the herd work, and for the first time information concerning the feed is made public. For the individual cows we give merely the total cost of the fifteen days' feed; for

the herds, the kinds, amounts and value of the different feed-stuffs used are submitted. In fifteen days the Jerseys ate \$98.14 worth of feed which was a daily charge for the herd of \$6.54, or a cost for the average daily ration per cow of $26\frac{1}{2}$ cents. The Guernseys ate \$76.25 worth of feed — a daily cost of \$5.08 or $20\frac{1}{2}$ cents per cow. The Shorthorns ate \$99.36 worth of feed — a daily cost of \$6.62, or $26\frac{1}{2}$ cents per cow. On this cost of rations the Jerseys showed a profit for fifteen days of \$119.82, the Guernseys of \$88.30, and the Shorthorns of \$81.36.

The feed-stuffs were charged per ton (2,000 lbs.) : Corn meal, \$22 ; corn hearts, \$13.50 ; oats, \$23 ; cotton-seed meal, \$26 ; bran, \$12.50 ; middlings, \$13 ; grano-gluten, \$14.75 ; oil meal, \$22 ; hay, \$11.50 ; silage, \$4.

KINDS, AMOUNTS, AND VALUES OF FOOD CONSUMED BY HERDS.

	PRICES.		JERSEYS.		GUERNSEYS.		SHORTHORNS.	
	Tnn (2,000 lbs).	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
Hay . . .	\$11 50	3,395	\$19 52	5,000	\$28 75	4,784.3	\$27 51	
Silage . . .	4 00	3,840.1	7 68	1,765	3 53	5,977.8	11 96	
Cotton-Seed								
Meal . . .	26 00	1,105.53	14 37	385.75	5 01	681.5	8 86	
Linseed Meal .	22 00	370.18	4 07	519	5 71	370.95	4 08	
Bran . . .	12 50	2,203.87	13 76	1,533	9 58	1,193.8	7 46	
Oats . . .	23 00	450.35	5 17	409.75	4 71	1,644.8	18 91	
Corn Hearts .	13 50	2,391.4	16 14	449.5	3 03	519	3 45	
Middlings . .	13 00	1,666.71	10 83	—	—	948.45	6 16	
Grano-Gluten .	14 75	—	—	—	4 99	—	—	
Corn Meal . .	22 00	600	6 60	994.7	10 94	997.1	10 97	

AMOUNT OF PRODUCTS.

	Milk, Pounds.	Cheese, Pounds.	Whey, Pounds.	Gain Live Wt. Pounds.
Jerseys . . .	13,296.4	1,451.76	11,578.7	327
Guernseys . .	10,938.6	1,130.62	9,666.7	480
Shorthorns . .	12,186.7	1,077.6	10,838.9	709

VALUE OF PRODUCTS—SUMMARY.

	Cheese.	Whey.	Live Wt.	Sales, Cheese.	Cost Food.	Net.
Jerseys . . .	\$193 98	\$9 26	\$14 72	\$217 96	\$98 14	\$119 82
Guernseys . . .	135 22	7 73	21 60	164 65	76 25	88 30
Shorthorns . . .	140 14	8 67	31 91	180 72	99 36	81 36

RELATIVE POSITIONS OF COWS IN THE CHEESE TEST.

Name.	Breed.	AMOUNT PRODUCTS.					VALUE PROD'TS.			SUMMARY.		
		Milk.	Cheese.	Whey.	Live Weight, Lbs. Gain or Loss (-).		Cheese—Value.	Whey—Value.	Live Weight, Value, Gain or Loss (-).	Total Value Products.	Cost of Food.	Net Profit.
		Lbs.	Lbs.	Lbs.	Lbs.		\$	\$	\$	\$	\$	\$
1. Ida Marigold	Jy.	673.6	70.92	586.6	28		9.47	0.47	1.26	11.20	4.23	6.97
2. Merry Maiden	"	624.6	70.07	543.8	18		9.36	0.44	0.81	10.61	4.05	6.56
3. Lily Martin	"	573.4	57.86	499.4	49		7.73	0.40	2.20	10.33	3.99	6.34
4. Signal Queen	"	581.0	60.97	505.9	43		8.14	0.40	1.94	10.48	4.14	6.34
5. Nora	Sh.	663.1	60.56	590.0	56		7.88	0.47	2.52	10.87	4.60	6.27
6. Baroness Argyle	Jy.	656.9	69.90	571.9	12		9.34	0.46	0.54	10.34	4.22	6.12
7. Exile's Lulu	Jy.	632.0	64.95	550.4	14		8.68	0.44	0.63	9.75	3.65	6.10
8. Hugo Countess	"	628.4	66.91	547.3	16		8.94	0.44	0.72	10.10	4.14	5.96
9. Alteration	"	583.2	65.47	512.3	9		8.75	0.41	0.41	9.57	3.73	5.84
10. Betsey 7th	Sh.	483.0	42.94	429.6	66		5.58	0.34	2.97	8.89	3.26	5.63
11. Brown Bessie	Jy.	639.1	68.47	556.6	1		9.14	0.45	0.05	9.64	4.18	5.46
12. Little Goldie	"	563.1	61.74	490.3	13		8.25	0.39	0.59	9.23	3.86	5.37
13. Gebevieve	Sh.	685.2	59.13	609.4	34		7.69	0.49	1.53	9.71	4.43	5.28
14. Sweet Ada	Gy.	535.0	54.05	472.7	37		6.47	0.38	1.67	8.52	3.25	5.27
15. Sheha Rex	Jy.	593.4	65.70	516.9	2		8.78	0.41	0.09	9.28	4.04	5.24
16. Albert's Gem	"	506.3	57.19	449.9	21		7.64	0.35	0.95	8.94	3.86	5.08
17. Amanda	Gy.	482.2	52.56	429.2	21		6.22	0.34	0.95	7.58	3.52	5.06
18. Materna	"	397.3	62.01	527.7	7		7.42	0.42	0.31	8.15	3.33	4.82
19. Select 5th	"	545.6	56.35	489.2	20		6.74	0.39	0.90	8.03	3.24	4.79
20. Flora Temple	Jy.	529.9	55.33	458.9	13		7.39	0.37	0.81	8.57	3.90	4.67
21. Rosette 5th	Gy.	582.8	56.54	515.0	14		6.75	0.41	0.63	7.79	3.13	4.66
22. Jeweller's Jessie	"	455.4	45.68	402.4	42		5.46	0.32	1.89	7.67	3.08	4.59
23. Nuts Pogis	Jy.	448.2	51.17	390.3	30		6.84	0.31	1.35	8.50	3.92	4.58
24. Ktly Clay 7th	Sh.	437.8	37.79	389.8	37		4.91	0.31	2.57	7.79	3.27	4.52
25. Ethice of Cornwall	Gy.	494.0	50.66	436.6	21		6.06	0.35	0.94	7.33	3.01	4.34
26. Pearl of Riverside	Jy.	509.3	37.62	443.5	4		7.70	0.35	0.18	8.23	3.97	4.26
27. Bashful 2nd	Sh.	658.0	58.32	585.2	8		7.59	0.47	0.36	8.42	4.35	4.07
28. Fancy 11th	"	429.1	41.61	381.6	60		5.41	0.31	2.70	8.42	3.97	4.05
29. Lottie C. 2nd	Gy.	461.2	46.28	407.6	28		5.53	0.33	1.26	7.12	3.08	4.04
30. Marchioness 6th	Sh.	540.5	48.64	480.7	49		6.32	0.33	2.20	8.91	4.98	3.93
31. Sayda 3rd	Jy.	524.4	56.82	456.7	0		7.59	0.37	0	7.96	4.12	3.84
32. Princess Honoria	"	488.2	54.75	425.1	5		7.31	0.34	-.23	7.42	3.60	3.82
33. Grace Pansy	"	419.3	46.98	365.2	14		6.28	0.29	1.08	7.65	3.88	3.79
34. Bella of the Toullets	Gy.	407.6	40.88	366.3	35		4.89	0.29	1.58	6.76	3.10	3.66
35. Gay Orphan	Jy.	422.3	49.21	367.6	16		6.57	0.29	0.72	7.58	3.96	3.62
36. Butterfly 3rd	Sh.	499.8	41.78	444.6	57		5.43	0.36	2.57	8.36	4.76	3.60
37. Emma Abbott 3rd	"	522.1	44.77	463.4	19		5.82	0.37	0.86	7.05	3.47	3.58
38. Mernie	Gy.	429.0	47.57	379.0	17		5.69	0.30	0.76	6.75	3.19	3.56
39. Jane Ash	"	360.7	39.40	318.8	38		4.71	0.25	1.71	6.67	3.13	3.54
40. Honor	"	418.3	41.21	369.6	25		4.93	0.30	1.13	6.36	2.94	3.42
41. Daisy Hoffman	Jy.	444.2	49.61	386.8	7		6.64	0.31	0.31	7.26	3.85	3.41
42. Annie Magnet	"	492.8	54.45	429.1	3		7.27	0.34	-.14	7.47	4.07	3.40
43. Mina 3rd	Gy.	398.2	39.96	351.9	31		4.78	0.28	1.40	6.46	3.08	3.38
44. Lorita	Jy.	444.7	49.31	387.5	9		6.59	0.31	0.41	7.31	3.96	3.35
45. Pretty Marchioness	"	432.6	45.77	376.6	14		6.12	0.30	0.63	7.05	3.75	3.30
46. Natasqua	"	420.2	50.33	373.4	8		6.74	0.30	-.36	6.68	3.39	3.29
47. Daisy Flower	Gy.	408.1	42.48	360.6	17		5.07	0.29	0.76	6.12	2.91	3.21
48. Panacea	"	373.2	39.36	329.8	29		4.71	0.26	1.30	6.27	3.08	3.19
49. Iza	Sh.	446.3	39.82	396.9	32		5.18	0.32	1.44	6.94	3.74	3.17
50. Prudie 3rd	Gy.	391.2	38.87	345.7	23		4.65	0.28	1.04	5.97	2.82	3.15
51. Countess Cora	"	406.3	42.38	359.1	16		5.07	0.29	0.73	6.09	2.94	3.15
52. Waterloo Daisy	Sh.	714.4	64.05	635.4	21		8.33	0.51	-.94	7.90	4.78	3.12
53. Trieste	Jy.	454.3	50.26	395.5	5		6.72	0.32	-.23	6.81	3.70	3.11
54. Orange Girl	Sh.	433.4	38.24	385.5	30		4.97	0.31	1.35	6.63	3.60	3.03
55. Martha Scott	Gy.	372.5	37.88	329.3	27		4.53	0.26	1.22	6.01	3.09	3.01
56. Ovation	"	416.2	42.11	367.7	17		6.04	0.29	0.76	6.09	3.08	3.01
57. Fillpail 9th	Sh.	367.7	35.65	327.0	38		4.04	0.29	1.62	6.32	3.51	3.01
58. Azalea	"	495.0	44.54	440.3	6		5.79	0.35	0.27	6.41	3.43	2.98
59. Fillpail 8th	"	367.2	27.71	273.2	62		3.61	0.22	2.79	6.62	3.66	2.96
60. Lawn Tennis	Gy.	394.0	41.56	348.2	18		4.97	0.28	0.80	6.05	3.15	2.90
61. Plumwood Belle	Sh.	441.0	41.40	392.2	25		5.38	0.31	1.12	6.81	3.94	2.87
62. Lady of Ellerslie	Gy.	423.7	47.47	374.4	11		5.68	0.30	-.50	5.48	2.68	2.80
63. Belle Price	Sh.	527.9	44.94	469.6	11		5.84	0.38	0.49	6.71	3.92	2.79
64. Miss Cowship	Gy.	383.0	40.37	347.1	11		4.83	0.28	0.50	5.61	3.13	2.48
65. Claudia	"	428.9	45.04	379.1	4		5.39	0.30	-.18	5.51	3.07	2.44
66. Maid of Oxford 2nd	Sh.	442.5	38.82	393.7	24		4.79	0.31	1.08	6.18	3.77	2.41
67. Rosa	"	439.7	36.31	391.1	16		4.72	0.31	0.68	5.71	3.31	2.40
68. Lucy Ann	"	408.0	41.57	366.3	11		5.41	0.33	0.49	6.23	3.90	2.33
69. Oxford Bloom 8th	"	407.9	36.35	362.8	42		4.73	0.29	1.89	6.91	4.58	2.32
70. Royal Duchess	"	466.7	39.73	415.1	31		5.17	0.33	1.40	6.90	4.61	2.29
71. Maid of Oxford 3rd	"	449.5	37.40	399.8	20		4.86	0.32	0.90	6.08	3.81	2.27
72. Aldine	Gy.	389.0	40.76	348.8	2		4.67	0.27	-.09	5.05	3.13	1.92
73. Rcsabella	"	375.3	39.24	331.6	3		4.89	0.27	0.13	5.09	3.18	1.91
74. Christata	Sh.	440.9	41.13	392.2	17		5.35	0.31	-.77	4.89	3.50	1.39
75. Maud's Antarctic	"	420.0	36.42	373.5	4		4.74	0.30	-.18	4.86	3.78	1.08

JUDGES' AWARDS IN CHEESE TEST.

		Flavor.	Texture.	Keeping Quality.	Color.	Total.	Price, Cents.
May 16	{ Jerseys . .	49.7	22.6	13.0	4.0	89.3	0.12
	{ Guernseys .	49.7	20.6	11.7	3.7	85.7	0.12
	{ Shorthorns .	50.3	22.3	12.7	4.0	89.3	0.12
May 17	{ Jerseys . . .	49.7	23.0	13.6	4.0	90.3	0.14
	{ Guernseys .	50.7	19.6	10.7	4.3	85.3	0.12
	{ Shorthorns .	51.7	23.3	14.0	5.0	94.0	0.14
May 18	{ Jerseys . . .	50.0	22.0	12.3	3.7	88.0	0.12
	{ Guernseys .	50.0	21.3	13.0	4.0	88.3	0.12
	{ Shorthorns .	50.0	21.7	13.0	4.0	88.7	0.12
May 19	{ Jerseys . . .	49.7	24.0	14.0	4.3	92.0	0.14
	{ Guernseys .	50.0	22.7	13.3	4.3	90.3	0.14
	{ Shorthorns .	50.0	22.0	13.4	4.3	89.7	0.12
May 21	{ Jerseys . . .	51.0	23.7	13.7	4.3	92.7	0.14
	{ Guernseys .	47.3	21.7	10.7	4.3	84.0	0.10
	{ Shorthorns .	50.0	22.7	13.3	4.3	90.3	0.14
May 22	{ Jerseys . . .	47.3	22.7	13.0	4.7	87.7	0.12
	{ Guernseys .	46.3	21.4	12.0	4.0	83.7	0.10
	{ Shorthorns .	51.7	23.7	14.0	4.3	93.7	0.14
May 23	{ Jerseys . . .	50.0	22.7	13.3	4.3	90.3	0.14
	{ Guernseys .	51.7	23.3	14.0	4.3	93.3	0.14
	{ Shorthorns .	50.3	20.4	12.7	4.3	87.7	0.12
May 24	{ Jerseys . . .	49.7	23.6	13.7	4.3	91.3	0.14
	{ Guernseys .	47.7	21.3	12.3	4.0	85.3	0.12
	{ Shorthorns .	50.3	23.7	14.0	4.3	92.3	0.14
May 25	{ Jerseys . . .	50.7	23.7	14.0	4.3	92.7	0.14
	{ Guernseys .	47.7	23.7	13.0	4.3	88.7	0.12
	{ Shorthorns .	50.0	23.0	13.3	4.7	91.0	0.14
May 26	{ Jerseys . . .	50.0	23.7	14.0	4.3	92.0	0.14
	{ Guernseys .	48.3	22.0	12.7	4.3	87.3	0.12
	{ Shorthorns .	50.0	20.0	14.0	4.3	88.3	0.12

THE NINETY-DAY TEST.

Three breeds competed, twenty-five cows each. One Shorthorn cow died at calving, after the test began, causing a blank record; thus only twenty-four Shorthorns competed. Every cow was credited with butter, solids not fat in the skim milk and buttermilk, and gain in live weight, all at rates fixed by the rules, and debited with cost of all food, of butter color used, and any loss of live weight. The awards were made on the basis of the greatest net profit for the ninety days.

RANK OF COWS IN NINETY-DAY TEST.

Cow No.	Name of Cow.	Breed.	Milk.				Credited Butter.		Credited Solids not Fat.	VALUE OF PRODUCTS.		Live Weight Gain (+) or Loss (-).	Cost of Food.	Cost of Butter Color.	Total Credits.	Total Debits.	Net Profit.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.		Butter.	Solids not Fat.						
1.	Brown Bessie.....	Jy.	3634.0	178.12	218.669	316.936	88.770	8.334			+3.645	25.511	0.014	98.749	25.525	73.224	
2.	Merry Maiden.....	"	3041.2	184.81	200.542	267.459	82.028	5.349			-0.540	23.391	0.013	87.917	23.404	64.513	
3.	Ida Marigold.....	"	3448.3	164.28	199.781	298.658	81.809	5.973			+3.510	27.125	0.013	91.292	27.138	64.164	
4.	Sheba Rex.....	"	3283.3	156.83	190.641	286.445	77.891	5.729			+2.835	24.845	0.013	86.455	24.858	61.597	
5.	Hugo Countess.....	"	3542.9	157.85	181.916	314.484	78.462	6.290			-1.485	25.492	0.013	86.237	25.505	60.732	
6.	Baroness Argyle.....	"	3286.2	159.93	194.433	282.145	79.432	5.643			-1.140	26.412	0.013	86.515	26.425	60.090	
7.	Islip Lenox.....	"	3070.0	146.46	178.089	273.473	72.893	5.469			-4.860	23.978	0.012	83.222	23.991	59.231	
8.	Romp's Princess.....	"	2984.4	154.97	188.497	263.423	77.021	5.268			-0.180	23.434	0.012	82.649	23.448	59.203	
9.	Materna.....	Gy.	3511.8	153.39	185.160	318.074	74.744	5.362			-0.585	22.693	0.006	81.166	23.284	57.822	
10.	Sweet Ada.....	"	3225.5	147.61	178.138	290.794	71.922	5.816			-1.035	22.050	0.006	78.773	22.056	56.717	
11.	Flora Temple 3rd.....	Jy.	3238.2	145.45	176.772	264.631	72.202	5.293			+3.420	24.416	0.012	80.915	24.427	56.488	
12.	Alteration.....	"	3065.7	148.03	179.902	272.354	73.290	5.447			-	22.620	0.012	78.737	22.638	56.099	
13.	Little Goldie.....	"	3214.3	144.79	175.892	285.627	72.063	5.713			+1.440	24.035	0.012	79.216	24.047	55.169	
14.	Select.....	Gy.	2986.1	140.68	169.853	268.224	68.551	5.364			-2.565	21.436	0.005	76.480	21.441	55.039	
15.	Albert's Gem.....	Jy.	2666.4	136.43	165.799	239.388	67.735	4.788			+4.410	23.366	0.011	76.933	23.377	53.556	
16.	Nora.....	Sh.	3679.8	133.85	-	-	65.083	6.546			-5.175	24.113	0.057	76.804	24.170	52.634	
17.	Exile's Lulu.....	Jy.	3224.5	138.43	168.556	279.941	68.932	5.599			-1.800	23.794	0.011	73.301	23.805	52.526	
18.	Lily Martin.....	"	3520.2	135.11	164.248	299.292	67.151	5.986			-0.015	25.156	0.011	76.152	25.167	50.985	
19.	Natasqua.....	"	2483.9	132.89	161.541	222.695	65.987	4.954			-1.620	21.078	0.010	72.061	21.088	50.973	
20.	Sayda 3rd.....	"	3043.1	139.93	170.114	268.273	69.545	5.365			-0.945	23.270	0.011	74.910	24.228	50.684	
21.	Signal Queen.....	"	3190.6	136.30	165.627	276.810	67.651	5.358			-1.620	24.377	0.011	74.807	24.388	50.419	
22.	Essence.....	Gy.	2847.6	132.57	160.034	249.957	64.492	4.999			-0.675	18.527	0.005	69.491	19.207	50.284	
23.	Genevieve.....	Sh.	3823.1	128.64	-	-	62.442	6.462			+3.735	22.500	0.055	72.819	22.555	50.264	
24.	Ethics of Cornwall.....	Gy.	2953.1	132.17	159.534	281.398	64.267	5.228			-0.675	19.993	0.005	70.170	19.998	50.172	
25.	Justa Pogie.....	Jy.	2745.3	129.70	157.716	249.029	64.524	4.981			-3.080	22.749	0.010	72.565	22.759	49.806	
26.	Pearl of Riverside.....	"	2653.7	132.27	160.824	241.561	65.743	4.831			-2.250	23.773	0.010	72.824	23.783	49.041	
27.	Waterloo Daisy.....	Sh.	3601.3	126.55	-	-	61.625	6.132			-1.980	20.992	0.054	69.737	21.046	48.691	
28.	Betsey 7th.....	"	3187.4	116.50	-	-	56.577	5.395			-8.235	21.708	0.049	70.207	21.757	48.450	
29.	Princess Honoria.....	Jy.	2690.4	131.19	159.470	240.038	65.252	4.801			-1.125	22.899	0.010	71.178	22.909	48.269	
30.	Imp. Bashful 2nd.....	Sh.	3341.0	127.84	-	-	62.095	5.768			-0.180	20.433	0.054	67.863	20.667	47.196	
31.	Daisy Hinman.....	Jy.	2677.8	127.62	155.150	232.960	63.444	4.660			-0.180	22.224	0.010	68.284	22.234	46.050	
32.	Plumwood Belle.....	Sh.	2721.1	112.49	-	-	54.553	4.839			-7.935	21.308	0.047	67.357	21.355	46.002	
33.	Amada.....	Gy.	3276.9	129.34	156.123	281.786	62.912	5.036			-2.520	20.082	0.005	68.548	22.607	45.941	
34.	Aldine.....	"	2515.6	117.85	142.252	531.806	57.449	4.638			+3.015	20.016	0.005	65.100	20.021	45.079	
35.	Fidr Maid of Hullet.....	Sh.	3520.7	125.38	-	-	60.814	6.053			-0.855	21.079	0.053	66.867	21.987	44.880	
36.	Rosette.....	Gy.	2884.0	116.98	141.153	251.237	56.994	5.025			-1.845	19.241	0.005	63.864	19.246	44.618	
37.	Lady of Ellerslie.....	"	2392.2	118.49	143.038	216.295	57.706	4.326			-0.945	18.067	0.005	62.977	18.972	44.005	
38.	Princess Aster 2nd.....	"	2826.9	115.55	139.489	243.345	56.238	4.868			-0.450	18.788	0.004	61.135	19.242	41.894	
39.	Emma Abbott.....	Sh.	2847.1	100.13	-	-	48.743	4.607			+8.190	19.726	0.042	61.900	19.768	41.832	
40.	Grace Pansy 2nd.....	Jy.	2344.4	121.03	147.023	208.580	60.068	4.172			-0.675	22.345	0.010	64.240	23.030	41.210	
41.	Belle Price.....	Sh.	3249.4	106.81	-	-	51.930	5.557			+4.995	21.309	0.045	62.842	21.354	41.125	
42.	Mernie.....	Gy.	2348.1	113.96	137.533	214.701	55.484	4.294			-0.990	19.919	0.004	60.768	19.923	40.845	
43.	Claudia.....	"	2377.7	110.23	133.040	215.212	53.701	4.304			-1.845	19.947	0.004	59.850	19.951	39.899	
44.	Lorita.....	Jy.	2320.3	120.84	146.635	206.176	59.935	4.124			-3.195	21.556	0.010	64.039	24.561	39.498	
45.	Gay Orphan.....	"	2175.9	114.27	138.975	193.581	57.006	3.872			-2.250	19.270	0.009	60.878	21.529	39.498	
46.	Rosa.....	Sh.	2866.1	96.24	-	-	46.311	4.905			-8.280	20.787	0.041	59.996	20.828	39.168	
47.	Azalea.....	"	2432.5	98.81	-	-	48.160	4.394			-4.950	18.678	0.042	57.504	18.720	38.784	
48.	Lady Bright.....	"	2608.9	95.13	-	-	46.802	4.853			-2.475	16.414	0.041	54.130	16.455	37.675	
49.	Kitty Clay 7th.....	"	2689.1	99.96	-	-	48.620	4.674			+5.400	22.942	0.042	58.694	22.984	35.710	
50.	Countess Cors.....	Gy.	2143.5	101.53	122.528	194.242	49.419	3.885			-1.215	19.014	0.004	54.519	19.018	35.501	
51.	Lawn Tennis.....	"	2204.1	101.64	122.529	196.788	49.371	3.936			-	17.960	0.004	53.277	17.964	35.313	
52.	Lottie C. 2nd.....	"	2371.9	102.65	123.835	207.674	49.924	4.153			-	27.0	18.572	0.004	54.077	18.846	35.231
53.	Marchioness 8th.....	Sh.	2314.9	99.94	-	-	48.489	4.623			+5.265	23.212	0.042	58.437	23.254	35.183	
54.	Prudie of Cas. B'k.....	Gy.	2124.8	98.20	118.515	186.388	47.795	3.728			-1.530	18.337	0.004	53.053	18.341	34.712	
55.	Bella of Touillits.....	"	2248.7	100.62	121.435	198.125	49.014	3.983			-0.720	19.237	0.004	53.697	19.241	34.456	
56.	Lucy Ann.....	Sh.	2599.3	93.63	-	-	45.528	4.419			-7.650	23.285	0.039	57.595	23.324	34.271	
57.	Maud's Antarctic.....	"	2472.2	87.75	-	-	42.662	4.250			-8.325	20.998	0.037	55.237	21.033	34.204	
58.	Miss Cowslip.....	Gy.	2306.3	99.59	120.159	205.307	48.420	4.106			-0.045	18.574	0.004	52.528	18.623	33.903	
59.	Maid of Oxford 3rd.....	Sh.	2256.2	89.19	-	-	43.343	4.566			-4.995	19.286	0.038	52.904	19.324	33.580	
60.	Daisy Flower.....	Gy.	2204.6	98.11	118.396	195.863	47.707	3.917			-0.720	18.761	0.004	52.344	18.765	33.579	
61.	Iza.....	Sh.	2409.6	91.17	-	-	44.285	4.317			-4.050	19.326	0.038	52.052	19.364	33.288	
62.	Jane Ash.....	Gy.	2182.5	97.40	117.556	168.704	47.413	3.374			-0.765	18.500	0.005	51.552	18.505	33.047	
63.	Honor.....	"	2257.0	94.38	113.981	198.274	45.943	3.965			-1.485	19.332	0.004	51.393	19.336	32.057	
64.	Annie Magoe.....	Jy.	-	-	-	-	48.558	3.622			-0.450	20.576	0.008	52.160	21.034	31.126	
65.	Fancy.....	Sh.	1810.8	81.62	-	-	39.813	3.273			-7.290	20.034	0.034	50.176	20.068	30.108	
66.	Jeweller's Jessie.....	Gy.	2212.9	93.15	112.406	200.672	45.301	4.013			-0.450	19.723	0.004	49.784	19.727	30.037	
67.	Ovation.....	"	2017.0	89.53	108.111	179.023	43.554	3.580			-0.045	17.407	0.003	47.179	17.410	29.769	
68.	Royal Duchess.....	Sh.	2202.1	83.00	-	-	40.358	3.802			-0.780	20.222	0.035	49.920	20.257		

The average net profit per cow is \$43.68.

The number of cows above this average is 137, as follows: 21 Jerseys, 9 Guernseys, and 7 Shorthorns.

The last Jersey is No. 64; the last Guernsey, No. 70; the last Shorthorn, No. 74.

The net profit of the best cow (No. 1) in this selected lot is almost three times that of No. 74.

(a.) *The Best Cow in each Breed (90 Days' Average).*

	Milk per Day. Lbs.	Butter per Day. Lbs. Ozs.
Brown Bessie, Jersey	40.3	2 6½
Materna, Guernsey	39.0	2 0¾
Nora, Shorthorn	40.9	1 13½*

(b.) *The Best Cow in any Breed.* — Brown Bessie, Jersey.

(c.) *Best Five Cows in each Breed.*

JERSEYS.

	Milk. Lbs.	Fat. Lbs.	Butter. Lbs.	Cost Food.	Live Weight.	Credit.	Debit.	Net Profit.
Brown Bessie	3,634	178	217	\$25 51	+81	\$98 75	\$25 53	\$73 22
Merry Maiden	3,041	165	201	23 39	+12	87 92	23 41	64 51
Ida Marigold	3,448	164	200	27 12	+78	91 29	27 14	64 15
Sheba Rex	3,283	157	191	24 85	+63	86 45	24 85	61 59
Hugo Countess	3,543	158	192	25 49	+33	86 24	25 51	60 73

GUERNSEYS.

Materna	3,512	153	185	22 69	—13	81 11	23 28	57 82
Sweet Ada	3,225	148	178	22 05	+23	78 77	22 05	56 71
Select 8th	2,986	141	170	21 44	+57	76 48	21 44	55 04
Essence	2,848	133	160	18 53	—15	69 49	19 21	50 28
Ethics of Cornwall, ...	2,953	132	160	19 99	+15	70 17	20 00	50 17

SHORTHORNS.

Nora	3,680	134	*166	24 11	*+115	76 80	24 17	52 63
Genevieve	3,823	129	161	22 50	+ 82	72 82	22 56	50 26
Waterloo Daisy	3,601	127	160	20 99	+ 44	69 74	21 05	48 69
Betsey 7th	3,167	116	145	21 71	+183	70 21	21 76	48 45
Bashful 2d	3,341	128	160	20 43	— 4	67 86	20 66	47 20

(d.) *The Best Five Cows of any Breed.* — The Jerseys, as above.

* Subject to slight correction.

(e.) *The Best Breed competing.* — The Jersey.*Record of the Jersey Herd for 90 Days.*

<i>Debit.</i>		<i>Credit.</i>	
Food, costs	\$587 50	Milk produced, lbs.	73,478
Butter color	0 28	Fat in milk	3,515
Loss, live weight, lbs.	167 00	Other solids	6,781
Total debit	\$595 30	Butter credited	4,274
		Gain in weight	911
Value total products			\$1,919 82
Net profit			1,324 62

Breeds Record for Full Period (90 Days).

Breeds.	Milk. Lbs.	Total Solids.	Fat.	Butter. Lbs.	Solids not Fat.	Value. Butter.
Jerseys	73,478.8	13.82	4.86	4,273.95	6,465.05	\$1,747 37
Guernseys	61,781.7	13.78	4.61	3,360.43	5,501.44	1,355 44
Shorthorns	66,263.2	12.66	3.63	2,890.87	5,750.85	1,171 77

Breeds.	Other Solids.	Value of Products.	Feed Cost.	Net Profit.	Live Weight added.
Jerseys	\$129 30	\$1,876 67	\$587 50	\$1,289 17	\$1,323 81
Guernseys	110 02	1,465 46	484 14	981 32	997 64
Shorthorns	115 02	1,286 77	501 79	785 00	910 12

DRY SUBSTANCE OF FEED CONSUMED IN NINETY-DAY TEST.

	Total Feed.	Coarse Feed.	Grain Feed.	Required for 1 lb. of butter.	Required for 1 lb. of milk.	Req'd for 1 lb. of milk, solid.
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Jerseys,	67,459	27,297	40,164	15,786	0.918	6.64
Guernseys,	58,960	27,461	31,499	17,545	0.954	6.93
Shorthorns,	63,651	28,659	34,992	22,018	0.961	7.87

THE THIRTY-DAY TEST.

This test was for butter only, no other item of revenue — as skim-milk, buttermilk, gain in live weight — being taken into account. This test was the more interesting to a large number of farmers on that account.

The following list gives the rank of the forty-five cows which took part in the test, arranged according to net earnings:—

RELATIVE POSITIONS OF COWS IN THIRTY-DAY TEST.

No.	Breed.	Name.	Lbs. Milk.	Lbs. Butter.	Value of Butter.	Cost of Feed.	Net Profit.
1	Jy.	Brown Bessie . . .	1,134.6	72.24	\$33 27	\$8 57	\$24 70
2	"	Merry Maiden . . .	965.0	66.70	30 72	7 62	23 10
3	Sh.	Kitty Clay 4th . . .	1,592.9	62.24	28 53	8 49	20 04
4	Jy.	Stoke Pogis Regina . . .	1,012.2	60.27	27 77	8 19	19 58
5	Gy.	Purity	1,060.7	54.80	24 95	5 58	19 38
6	"	Careno	922.3	54.94	25 01	6 11	18 90
7	Jy.	Ida Marigold	985.8	59.31	27 34	8 45	18 89
8	"	Sheba Rex	1,004.2	57.51	26 49	7 92	18 57
9	Gy.	Vesta's Valencia . . .	985.7	52.47	23 89	5 65	18 24
10	"	Sweet Ada	986.2	55.54	25 30	7 08	18 22
11	Jy	Cupid's Jersey Maid . .	1,028.7	55.16	25 40	7 48	17 92
12	"	Romp's Princess . . .	704.7	51.36	23 68	5 90	17 78
13	"	Flora Temple 3rd . . .	923.6	55.06	25 36	7 70	17 66
14	"	Baroness Argyle . . .	925.5	56.22	25 90	8 27	17 63
15	Gy.	Materna	1,058.4	54.68	24 90	7 36	17 54
16	"	Select 8th	866.9	54.05	24 61	7 07	17 54
17	Jy.	Exile's Lulu	968.4	54.02	24 88	7 42	17 46
18	"	Katherine of Pittsford .	1,062.3	54.11	24 92	7 66	17 26
19	Gy.	Duchess of Orleans . .	1,044.3	50.71	23 10	5 98	17 12
20	Jy.	Hugo Countess	684.2	48.17	22 17	5 21	16 96
21	Gy.	Marita	1,014.6	47.55	21 65	5 72	15 93
22	Jy.	Islip Lenox	714.6	47.70	21 95	6 14	15 81
23	"	Signal Queen	944.5	51.52	23 74	8 00	15 74
24	Sh.	Bashful 2nd	971.3	47.47	21 76	6 26	15 50
25	Jy	Sayda 3rd	843.6	47.82	22 01	6 71	15 30
26	Gy.	Ethics of Cornwall . . .	865.4	47.92	21 82	6 53	15 29
27	Sh.	Kitty Clay 3rd	1,230.6	50.15	22 98	7 74	15 24
28	"	Waterloo Daisy	1,169.1	47.77	21 89	7 28	14 61
29	Gy.	Rosette	904.3	45.89	20 90	6 37	14 53
30	Sh.	Nora	1,037.2	47.20	21 63	7 33	14 30
31	Gy.	Aldine	767.8	44.25	20 15	6 13	14 02
32	Sh.	Lady Bright	1,048.8	44.52	20 40	6 90	13 50
33	Gy.	Lady of Ellerslie . . .	658.3	41.44	18 87	5 51	13 36
34	Sh.	Genevieve	1,071.1	43.85	20 10	6 98	13 12
35	Gy.	Amanda	847.6	40.93	18 64	5 86	12 78
36	Sh.	Betsey 7th	948.8	41.82	19 16	6 44	12 72
37	"	Kitty Clay 7th	831.2	42.43	19 45	6 79	12 66
38	"	Kitty Clay 5th	926.9	41.10	18 84	6 24	12 60
39	Gy.	Princess Aster 2nd . . .	866.8	41.65	18 97	6 37	12 60
40	Sh.	Belle Prince	1,099.6	42.17	19 32	7 18	12 14
41	"	Vervain	1,093.6	40.48	18 55	6 56	11 99
42	Gy.	Essence	669.1	37.36	17 02	5 46	11 57
43	Sh.	Fair Maid of Hullet . .	884.9	39.12	17 93	6 39	11 54
44	"	Lucy Ann	788.7	36.36	16 67	7 03	9 64
45	"	Rosa	923.6	35.97	16 48	6 95	9 53

The awards were as follows : —

(a.) *The Best Cow of any Breed.*

Brown Bessie, Jy.

(b.) *Best Cow in each Breed.*

Brown Bessie, Jy. Purity, Gy. Kitty Clay 4th, Sh.

(c.) *The Best Five Cows in any Breed.*

	Lbs. of Milk.	Lbs. of Butter.	Daily Yield..	Value Butter.	Cost of Food.	Net Profit.
Brown Bessie, Jy.	1,134.6	72.24	2.6 $\frac{1}{4}$ ozs.	\$33 27	\$8 57	\$24 69
Merry Maiden, Jy.	965.0	66.70	2.3 $\frac{1}{2}$ "	30 72	7 62	23 10
Kitty Clay 4th, Sh.	1,592.0	62.24	2.1 "	28 52	8 49	20 03
Stoke Pogis Regina 4th, Jy.,	1,012.2	60.27	2.0 "	27 76	8 19	19 57
Purity, Gy.	1,060.7	54 80	1.3 $\frac{1}{4}$ "	24 95	5 58	19 38

(d.) *The Best Five in each Breed.*

JERSEYS.

	Butter. Lbs.	Cr. Sales.	Dr. Food.	Net. Profit.
Brown Bessie	72.24	\$33 27	\$8 57	\$24 69
Merry Maiden	66.70	30 72	7 62	23 10
Stoke Pogis Regina	60.27	27 76	8 19	19 57
Ida Marigold	59.30	27 34	8 45	18 89
Sheba Rex	57.51	26 49	7 92	18 57
Totals	316.02	\$145 58	\$40 75	\$104 82
Averages	63.20	\$29 11	\$8 15	\$20 96

GUERNSEYS.

Purity	54.80	\$24 95	\$5 58	\$19 38
Careno	54.94	25 01	6 11	18 90
Vesta's Valencia	52.47	23 89	5 65	18 24
Sweet Ada	55.54	25 30	7 08	18 22
Materna	54.68	24 90	7 36	17 54
Totals	272.43	\$124 05	\$31 78	\$92 28
Averages	54.49	\$24 81	\$6 35	\$18 45

SHORTHORNS.

Kitty Clay 4th	62.24	\$28 53	\$8 49	\$20 04
Bashful 2d	47.47	21 76	6 26	15 50
Kitty Clay 3d	50.15	22 98	7 74	15 24
Waterloo Daisy	47.77	21 89	7 28	14 61
Nora	47.20	21 63	7 33	14 30
Totals	254.83	\$116 79	\$37 10	\$79 69
Averages	50.97	\$23 36	\$7 42	\$15 93

(c.) *The Best Breed.*

THE JERSEY.

The summary of the herds is as follows:—

	Jersey.	Guernsey.	Shorthorn.
Pounds of Milk	13,921.90	13,518.40	15,618.30
Pounds of Butter	837.21	724.17	662.66
Value of Butter	\$385.59	\$329.77	\$303.69
Cost of Food	111.24	92.77	104.55
Net Profit	274.35	237.00	199.14
Cost of Butter, per lb.	0.133	0.128	0.158
Profit on Butter, "	0.328	0.327	0.301
Average price of Butter credited			
cents	0.461	0.455	0.459

The facts developed by the thirty-day test are extremely useful in emphasizing the lesson that a large yield and the greatest net profit do not always go together. The wonderful Jersey cow "Brown Bessie" deserves study at every point. She is the winner in the two most important contests, lasting four months. During the last thirty days her food cost was practically at the same rate as it was during the ninety-day test, about \$8.50 a month, and the rate of net profit the same, or rather larger, as during the last thirty days she was credited with butter only, \$24.69, whereas in the ninety-day test her skim-milk, buttermilk, and increased live weight were added to her butter earnings to make a total net profit of \$73.22 for the three months' test. Another remarkable feature is the volume of milk. "Brown Bessie" gave during the ninety days 3,634 lbs., and the Shorthorn cow "Genevieve" 3,823 lbs., or 40 lbs. against 42 lbs. per day. Another remarkable fact is that "Brown Bessie" was the victor of any breed, against the Guernsey "Purity" and the Shorthorn "Kitty Clay 4th," in the thirty-day test, as neither of these animals were in the two previous tests. In the competition between breeds, the Guernseys came out as producers at lowest cost. The yields in the thirty-day test were wonderfully even in quantity, the food cost nearly alike, and the net profits of each of the best five were very close. The question suggests itself: Could they not have been fed more, and have run the winners closer, or have placed three of their number in the best five of any breed, and at least two of them in the best five of any breed in the ninety-day test?

Another very striking feature of the work is that the great cows "Ida Marigold," the winner in the cheese test, and "Sweet Ada," the best Guernsey in the cheese test and the best Guernsey in the

sweepstakes, both gave large yields of butter in the thirty-day test. "Ida Marigold" produced more (59.30 lbs.) than the fifth cow, "Purity," in the best five (54.80). "Sweet Ada" is fourth in the list of the five best Guernseys, with a credit of 55.54 lbs. The same fact comes out in the Shorthorn performance, thus still further enforcing the principle that net profit, and not the largest aggregate yield, is the safest criterion of value. As the food cost of the butter was about thirteen cents per lb., it is fair to ask whether the Guernseys could not have eaten two or more dollars' worth of food, and added the expenditure to the net profit. "Materna," the best Guernsey in the ninety-day test, lost about ten ounces of weight; "Sweet Ada" gained but four ounces. The first ate \$22.69 worth of food, the second, \$22.05. No cattleman will believe these cows had reached the limit of their power of digestion, and three dollars' worth of extra food would have been a possible seven or eight dollars' worth of increased butter. Milk-producers and butter-makers know that when a cow's food costs below thirteen cents a pound on her butter, at the Chicago prices of feeding stuffs, there is room for more profit on butter at forty-five cents a pound when animals show no increase in live weight. The cow "Purity" made her butter at a lower cost than any cow in the list for the thirty-day test. She, "Careno," and "Vesta's Valencia," could surely have won three places in the best five of any breed. "Sweet Ada" and "Materna" at least had an even chance for fourth and fifth place in the best five of any breed for the ninety-day test.

PRICES, KINDS, AMOUNTS, AND VALUES OF FOOD IN THE
30-DAY TEST.

Articles.	Price per Ton.	JERSEYS.		GUERNSEYS.		SHORTHORNS.	
		Amt. Lbs.	Value.	Amt. Lbs.	Value.	Amt. Lbs.	Value.
Hay	\$10 00	5,525	\$27 62	3,779	\$18 90	4,215	\$21 07
Silage	1 50	1,656	1 24	8,605	6 45	16,853	12 64
Cotton-seed Meal .	26 00	631	8 20	308	4 00	1,046	13 60
Oil Meal	22 00	1,142	12 56	895	9 85	540	5 94
Bran	12 50	2,878	17 99	3,258	20 36	3,277	20 48
Oats	23 00	1,402	16 13	1,023	11 76	471	5 42
Corn Hearts . . .	13 50	2,254	15 21	2,573	17 37	2,909	19 64
Middlings	13 00	817	5 31	613	3 99	821	5 33
Grano-Gluten . . .	14 67	—	—	12	0 09	58	0 43
Corn Meal	22 00	505	5 56	—	—	—	—
Carrots	8 00	249	1 00	—	—	—	—
Old Hay	11 50	74	0 42	—	—	—	—
		\$111 24		\$92 77		\$104 55	

AVERAGE QUANTITIES PER COW DAILY.

	JERSEYS.	GUERNSEYS.	SHORTHORNS.
Hay	lbs. 12.27	8.4	9.4
Silage	" 3.70	19.0	37.0
Cotton-seed Meal	" 1.40	0.7	2.3
Linseed Meal	" 2.50	2.00	1.2
Bran	" 6.40	7.24	7.3
Oats	" 3.10	2.30	1.05
Corn Hearts	" 5.00	5.70	6.50
Middlings	" 1.80	1.40	1.80
Grano-Gluten	" —	0.03	0.13
Corn Meal	" 1.10	—	—
Carrots	" 0.42	—	—
Old Hay	" 1.60	—	—

An examination of the quantities and kinds of food consumed, their physical condition, chemical constituents, condimental scents and flavors, and their enjoyment by the animals, suggests some pointed questions. It must be admitted that the Jerseys had food compounded for them which contained the largest percentages of albuminoids and the greatest total of digestible albuminoids; it was most aromatic, and therefore best calculated to excite the appetite, enjoyment, and digestion. It was known that the ensilage at Chicago was poor, most of it unsound. The strong points in the Jersey rations are the small amount of the inferior ensilage, the proportion of cotton-seed meal, linseed meal, oats, corn meal, and carrots. The carrots were an invaluable salad, and the oats very aromatic. All practical men know results are obtained from oats which chemical analysis does not explain. The weak point of the Guernsey rations was its too large quantity of ensilage, too little cotton-seed meal, linseed meal, and oats, and no roots. The error of the Shorthorn ration was excess of ensilage, deficient linseed meal and oats. It would be hard to improve on the Jersey compound, having regard to the mechanical condition of the mixture, the nutritive ratio, and the aromatic effect. The following would have been an improvement for the Guernseys and Shorthorns:—

Hay	lbs. 12.00	× 30 days	× 15 cows	\$10 00	\$27 00
Ensilage	" 5.00	"	"	1 50	1 69
Cotton-seed Meal	" 1.50	"	"	26 00	8 77
Linseed Meal (new proc.)	" 3.00	"	"	22 00	14 85
Bran	" 6.00	"	"	12 50	16 93
Oats	" 4.00	"	"	23 00	20 70
Corn Hearts	" 5.00	"	"	13 50	15 20
Middlings	" 1.00	"	"	13 00	2 92
Corn Meal	" 1.00	"	"	22 00	4 95
Carrots	" 1.00	"	"	8 00	1 75

\$114 76

It will be observed that this ration is \$3.52 higher than the Jersey. The object has been to improve the condition, increase the nitrogenous constituents, and improve the scent and flavor by the addition of cotton-seed, linseed meal, oats, and carrots. Expressed in percentage composition, cotton-seed meal about 7; linseed meal, 14; bran 28; oats, 19; corn hearts, 23; middlings, 3; corn meal, 3; carrots, 3 per cent, equal 100 parts.

THE SWEEPSTAKE COMPETITION.

The special awards in this class were based on the work of the cows during the first fifteen days of each of the three tests — the fifteen-day cheese test the first fifteen days of the ninety-day test and the first fifteen days' work in the thirty-day butter test. Only cows which had done the four and a half consecutive months' work were eligible here; and before the award could be won, each cow had to accomplish a solid four months' work.

The awards were as follows:—

(a.) The best cow in each breed competing: Jersey, "Merry Maiden"; Guernsey, "Sweet Ada"; Shorthorn, "Nora."

(b.) The best cow in any breed competing: The Jersey, "Merry Maiden."

(c.) The best five cows in each breed competing:—

<i>Jerseys.</i>		<i>Guernseys.</i>		<i>Shorthorns</i>	
Merry Maiden,	\$30.16	Sweet Ada,	\$24.50	Nora,	\$23 76
Brown Bessie,	29.46	Materna,	24.02	Genevieve,	21.42
Ida Marigold,	27.45	Select 8th,	24.01	Betsey 7th,	20.73
Baroness Argyle,	26.47	Amanda,	22.22	Bashful 2nd,	20.41
Hugo Countess,	25.92	Ethics of Cornwall,	21.27	Waterloo Daisy,	19.06

(d.) The best five cows in any breed competing: The five (5) Jerseys last named above.

(e.) The best breed competing: The Jersey.

Here, again, the question may be asked: Could not "Sweet Ada" and "Materna" have had fourth and fifth places in the best five of any breed in the sweepstakes, under a freer food ration?

It now remains to show the best single day's work of three cows of each breed during the first fifteen days of the ninety-day test. Though these cut no figure in the awards, they will help you to compare phenomenal yields on your side with these animals, as they may be said to be the only phenomenal cows in the tests. From whichever

standpoint the two sets in the Channel Island breeds are viewed, they are marvels of dairy merit. "Brown Bessie" and "Merry Maiden" made over three lbs. of butter per day on some days during the ninety-day test, but inasmuch as no award was based on the yield for one or two days of any individual animal, or a herd, no official account has been taken of extra heavy single days, except as integers in the addition column.

BEST DAYS DURING FIRST FIFTEEN DAYS IN NINETY-DAY TEST.

	Milk, Lbs.	Fat, Lbs.	Butter, Lbs.
<i>Jerseys —</i>			
Brown Bessie	43.9	2.19	2.63
Merry Maiden	40.5	2.15	2.58
Ida Marigold	45.3	1.99	2.39
<i>Guernseys —</i>			
Materna	41.8	1.84	2.21
Sweet Ada	40.2	1.97	2.37
Select 8th	40.9	2.00	2.40
<i>Shorthorns —</i>			
Nora	48.3	1.88	2.25
Genevieve	52.3	1.78	2.14
Waterloo Daisy	47.4	1.42	1.70

TABLES OF WEIGHTS OF COWS.

The following tables show the weight of each cow in the three breeds, both on going in and coming out of the tests at the World's Fair. These weights are obtained by weighing each cow for the five days at the beginning and ending of the tests, the average of the five days being taken as the cows' weight.

THIRTY JERSEYS.

NAME.	Date of Beginning.	Weight.	Date of Ending.	Weight.
Shoba Rex	May 12.	926	Sept. 28.	1,013
Nauasqua	"	815	Aug. 28.	844
Exlie's Lulu	"	880	Sept. 28.	963
Albert's Gem	"	851	Aug. 29.	970
Tristeka	"	901	May 30.	896
Little Goldie	"	976	Aug. 26.	.....
Alteration	"	791	Died.	.....
Gray Pogie	"	834	Aug. 29.	932
Sayda 3d	"	914	"	880
Gray Orphan	"	965	Sept. 28.	990
Pearl of Riverside	"	982	Aug. 29.	1,036
Lorita	"	988	"	926
Flora Temple 3d	"	964	Sept. 28.	1,079
Brown Beasie	"	966	"	1,026
Lily Martin	"	887	Aug. 29.	1,003
Annie Mae	"	859	"	846
Hugo Countess	"	982	Sept. 28.	911
Ida Mariouid	"	1,078	"	1,160
Daisy Homan	"	892	Aug. 29.	903
Pretty Malden	"	908	Sept. 28.	946
Signal Queen	"	849	May 30.	883
Grace Pansy 2nd	"	980	Sept. 28.	1,094
Princess Hecoria	"	840	"	865
Princess Argyle	"	914	Sept. 28.	1,009
Isip Lenox	"	932	"	1,016
Romp's Princess	"	776	"	785
Cupid's Jersey Maid	Aug. 29.	907	"	886
Stoke Pogie Regina	"	849	"	885
Katherine of Plimsford	"	806	"	825
Totals	.....	27,457	.....	28,982
Averages	.....	915	.....	904

THIRTY-TWO GUERNSEYS.

NAME.	Date of Beginning.	Weight.	Date of Ending.	Weight.
Aldoe	May 12.	905	Sept. 28.	990
Amaoda	"	1,011	"	977
Belle of the Toullets	"	930	Aug. 29.	981
Claudia	"	939	"	976
Countess Cora	"	930	"	973
Daisy Flower	"	787	"	920
Ethics of Corowall	"	949	Sept. 28.	975
Honor	"	876	Aug. 29.	934
Jane Ash	"	915	"	971
Jeweller's Jessie	"	935	"	985
Lady of Ellerslie	"	865	Sept. 28.	900
Lavin Tenda	"	731	Aug. 29.	.....
Loitie C. 2d	"	986	"	1,008
Martha Scott	1,041	May 30.	1,088	Belle Price
Materia	1,039	Sept. 28.	1,080	Christata
Merde	910	Aug. 29.	949	Plumwood Belle
Mina 2d	838	May 30.	887	Waterloo Daisy
Miss Cowell	881	Aug. 29.	871	Royal Duchess
Onaton	913	"	936	Marchioness 5th
Padua	932	"	981	Oxford Bloom 8th
Prudie 3d of Castlebrook	984	"	.....	Genevieve
Rosa Bella	804	"	Sept. 28.	980
Rosette 8th	1,066	"	"	1,045
Sweet Ada	971	"	"	Butterfly 3d
Essence	1,004	"	"	1,135
Princess Aslor 2d	30.	"	"	Basful 2d
Careno	972	"	"	1,000
Duchess of Orleans	944	"	"	975
Marla	983	"	"	990
Purity	881	"	"	980
Vesta's Valencia	1,136	"	"	920
Totals	.....	28,982	.....	1,080
Averages	.....	904	.....	.....

THIRTY-TWO SHORTHORNS.

NAME.	Date of Beginning.	Weight.	Date of Ending.	Weight.
Iza	May 12.	1,162	Aug. 29.	1,284
Maid of Oxford 2d	"	1,179	"	1,366
Maid of Oxford 3d	"	1,128	"	1,259
Rosa	"	1,039	Sept. 28.	1,241
Azalia	"	907	Aug. 29.	1,023
Orange Girl	"	963	"	1,098
Kitty Clay 7th	"	1,097	Sept. 28.	1,287
Lucy Ann	"	1,272	"	1,434
Betsy 7th	"	987	"	1,216
Filipall 8th	"	938	May 30.	1,006
Maid's Antarctic	"	1,083	Aug. 29.	1,238
Belle Price	"	1,025	"	1,206
Emma Abbott	"	1,080	Sept. 28.	1,234
Christata	"	1,018	Aug. 30.	1,214
Plumwood Belle	"	953	May 30.	1,036
Waterloo Daisy	"	1,147	Aug. 29.	1,349
Royal Duchess	"	1,263	Sept. 28.	1,317
Marchioness 5th	"	1,197	Aug. 29.	1,356
Oxford Bloom 8th	"	1,490	May 30.	1,499
Genevieve	"	1,275	"	1,317
Fancy 11th	"	1,166	"	1,064
Butterfly 3d	"	1,163	Aug. 29.	1,385
Basful 2d	"	1,420	"	1,560
Lady Bright	"	1,359	Sept. 28.	1,347
Marchioness 6th	30.	1,184	"	1,286
Fair Maid of Hallett	12.	1,499	Aug. 29.	1,616
Kitty Clay 4th	"	1,212	Sept. 28.	1,220
Kitty Clay 3d	Aug. 20.	1,320	"	1,348
Vervain	"	1,247	"	1,278
Kitty Clay 5th	"	1,201	"	1,216
Totals	.....	37,110	.....	1,124
Averages	.....	1,159	.....	.....

RELATIVE STANDING OF TWENTY-SIX COWS

tha went through the entire time of tests Nos. 1, 2, and 3. The net earnings of the first fifteen days of the three tests, being the basis of the sweepstakes awards.

No.	NAME.	WEIGHT OF COWS AT CLOSE OF TESTS.	BREED.	NET PROFIT IN DOLLARS AND CENTS.			
				TEST No. 1.	TEST No. 2.	TEST No. 3.	AGGREGATE.
1	Merry Maiden . .	946	Jersey.	6.56	12.129	11.476	30.165
2	Brown Bessie . .	1,026	"	5.46	11.245	12.761	29.466
3	Ida Marigold . .	1,169	"	6.97	10.419	10.063	27.452
4	Baroness Argyle .	1,005	"	6.12	11.103	9.250	26.473
5	Hugo Countess . .	911	"	5.96	10.877	9.083	25.920
6	Sheba Rex	1,013	"	5.24	11.162	9.354	25.756
7	Sweet Ada	1,135	Guern.	5.27	9.742	9.493	24.505
8	Materna	1.080	"	4.82	10.211	8.986	24.017
9	Select 8th	1,043	"	4.79	10.637	8.583	24.010
10	Flora Temple 3d .	1,079	Jersey.	4.67	10.072	9.082	23.824
11	Nora	1,224	S-Horn.	6.27	9.968	7.525	23.763
12	Exile's Lulu . . .	963	Jersey.	6.10	8.447	8.998	23.545
13	Signal Queen . . .	1,094	"	6.34	9.184	7.947	23.471
14	Amanda	977	Guern.	5.06	10.608	6.557	22.225
15	Genevieve	1,297	S-Horn.	5.28	9.003	7.142	21.425
16	Ethics of Cornwall	975	Guern.	4.34	9.073	7.867	21.270
17	Sayda 3d	990	Jersey.	3.84	8.909	8.074	20.823
18	Betsy 7th	1,216	S-Horn.	5.63	8.735	6.363	20.728
19	Bashful 2d, imp. .	1,347	"	4.07	8.368	7.975	20.413
20	Waterloo Daisy . .	1,317	"	3.12	8.220	7.722	19.062
21	Lady of Ellerslie .	900	Guern.	2.80	8.255	6.882	17.937
22	Kitty Clay 7th . .	1,287	S-Horn.	4.52	5.804	6.391	16.715
23	Aldine	990	Guern.	1.92	7.565	7.180	16.665
24	Belle Price	1,234	S-Horn.	2.79	6.685	5.825	15.300
25	Rosa	1,241	"	2.40	6.316	4.811	13.527
26	Lucy Ann	1,434	"	2.33	5.481	5.107	12.918

Size and constitutional vigor suggest many interesting questions in this summary.

THE HEIFER TEST.

contained only seven Jerseys and six Shorthorns, and the work extended over twenty-one days. The work done was highly creditable.

The test lasted twenty-one days and the official report gives the following figures:—

FOOD CONSUMED.

	JERSEYS.		SHORTHORNS.	
	Total Lbs.	Daily Av. each cow.	Total Lbs.	Daily Av. each cow.
Hay	1,471.5	10.01	922.	7.30
Silage	42.0	.28	1,593.	12.60
Bran	893.0	6.08	709.	5.60
Middlings	260.0	1.80	250.	1.98
Corn Hearts . . .	78.	.53	596.	4.73
Oats	482.	3.28	176.	1.40
Corn meal	573.	3.90	—	—
Oil meal	348.5	2.37	118.5	.94
Cotton seed . . .	274.5	1.86	332.	2.63

The cost of the daily ration averaged 23.5 cents for the Jerseys and 18.7 cents for the Shorthorns; the Jerseys at the rate of 19.82 pounds of grain each per day, and the Shorthorns 17.28 pounds. On this feed, the average daily return by the Jerseys was 1.321 pounds of butter, and 1.02 pounds live weight gain; the Shorthorns gave .971 pounds of butter, and 3.05 pounds increase in live weight. The food cost of the Jersey butter was 17.7 cents per pound; and of the Shorthorn butter it was 19.2 cents per pound.

NAMES.	Breed.	Lbs. milk.	Lbs. butter.	Value of butter.	Value of solids not fat.	Value of live weight gain.	Total credits.	Cost of food.	Profit.
Lily Garfield.....	J.	562.7	37.488	14.996	1.066	0.855	16.917	5.697	11.22
Miss Kenick 24th.....	SH.	590.9	26.085	10.44	1.038	3.51	14.989	4.019	10.97
Fancy 15th.....	SH.	522.3	23.078	9.23	.929	2.79	12.95	3.576	9.374
Jeacette of Pittsford....	J.	501.8	29.973	11.989	.936	.9	13.825	5.14	8.685
Woodstock Mystery....	J.	388.6	26.223	10.493	.727	1.215	12.435	3.782	8.653
Aggie 2d.....	SH.	474.1	23.211	9.285	.865	2.295	12.445	4.17	8.275
Campania.....	J.	566.7	28.127	11.25	1.037	.9	14.042	5.286	7.901
4th Belle of Trowbridge	SH.	362.6	19.148	7.662	.688	3.105	11.455	3.945	7.51
Eltruria.....	J.	483.4	24.137	9.655	.899	1.755	12.309	5.09	7.219
Ialo F.....	J.	465.3	25.251	10.099	.868	.945	11.912	4.716	7.196
Blo-som.....	SH.	335.3	14.55	5.825	.63	3.24	9.695	3.794	5.901
Woodstock Lady.....	J.	398.1	23.027	9.209	.743	.18	10.132	4.728	5.404
Kitty Clay 8th.....	SH.	295.8	16.289	6.512	.563	2.34	9.415	4.024	5.391
Average for Jerseys....		479.6	27.746	11.10	.90	.96	12.96	4.92	8.04
Average for Shorthorns.		430.2	20.394	8.16	.786	2.88	11.825	3.921	7.904

Few of these heifers were over two years old.

And now the delicate and responsible task you invited me to take up in reviewing the dairy cow work of the two nations in their very

highest areras of effort must come to a close. I have presented all the testimony I could command on either side, showing your strongest points. In the Chicago High Court of Appeal the most rigid and equitable of rules of procedure have been followed. Every material fact has been stated, and the evidence collected must go down in history unquestioned. The judges must be those international jurors who read, observe, think, work among, and earn their daily bread with the co-operation of the good cows on both sides the ocean.

THE VERDICT.

as I understand it, according to all rules of procedure among lawyers and sportsmen, may be summarized as follows : —

1. According to the evidence set forth, the only complete work ever done to learn the relative business value of a cow was at the World's Fair, Chicago.

2. Inasmuch as net earnings is the only and absolute mode of determination, the Chicago work is incomparable.

3. In so far as phenomenal yields are concerned, we may accord the honor to your Shorthorn this year, and to the Black Poll of last year. It may also be true that you have a greater number of heavy dairy producing Shorthorns than we have. I think this is true.

4. Inasmuch as the largest yield can never be the same as the greatest earnings in net profit, the butter breeds on both sides of the water have shown themselves the superior animals. Nor have the winners always been the largest cows.

5. It is also demonstrated beyond question that marked individuality is a most potent factor in all animal endeavor.

6. Inasmuch as continued increase in live weight has always been at the expense of dairy work, it must be allowed that the production of meat by dairy animals, at whatever price, is costly compared to the food value of a quart of milk of standard quality, or a pound of butter at a food cost of thirteen to fifteen cents.

7. The best dairymen on our side prefer the most economical animal, and most good business-men east of Niagara Falls long since chose the Channel Island breeds, and their crosses, for profit.

8. The best cow is the poor man's cow.

9. The Chicago verdict harmonizes with the best business practice I know from Baltimore to Montreal, and from Niagara to Maine, for the last quarter of a century ; and from Niagara to the Missouri, and Chicago to New Orleans, the Channel Island cows, and their crosses,

have been asserting their superior business merit for nearly twenty years.

Before I utter my last word, permit a suggestion. Your Association and the "Royal" have had a unique career. We have nothing like either on this side. Both societies are supported entirely by members' subscriptions; neither receives a shilling from the State. You have done a great and honorable work. You are rich in men of great public spirit. Among your ex-presidents and your active working members there is public spirit enough to wish to surpass the Chicago work. Will you not organize a great test yourselves? If our contention with reference to the Channel Island cattle is wrong, and your own view of the superiority of your Shorthorn is correct, it is worth something to have the doubt settled. You have accumulated facts enough in your fourteen years' experience to make you doubt your Shorthorn. A great public test of one hundred and fifty days — or a half-year's cow work on cheese, all products, and butter — at a cost of £25,000, would be a good investment for the British dairy interests. Why not try? You would have the advantage of us in providing rich green clover instead of the coarse stuff Chicago cows had for fodder. You could do the work on some spot near London; begin in April and end in September; then exhibit your cows at the Dairy Show in October decorated with the awards, and so raise the receipts from admissions. A hundred thousand extra attendance ought to be easy in London, and would be £5,000 — a pretty good start towards the cost of the tests. Breeders would no doubt join forces as ours did, and the thing could be done. Why not do it, and let us have a new form of business rivalry, and a fresh taste of a farmer's sport of a first-class international interest?

The British dairy farmer has an immense interest involved; if you can turn on new light, something may be done to aid him in solving the hard business problems he confronts every day. The truth will be a sunbeam of encouragement, and a beacon to renewed endeavor. The good dairyman is of no State or country; we are as likely to find him in a lonely Swedish village as within fifty miles of Loudou or Paris. He is just as numerous and as skilful in America as he is in Germany or Denmark. Our chief differences are our points of view, and local prejudices never enlighten, though they often obscure. The Chicago work has been called a dairy classic; you have the power and opportunity to create a dairy encyclopædia within the present century. I shall hope to see it done.

APPENDIX.

RULES FOR TESTING DAIRY CATTLE

AT STATE FAIRS.

Entries should state the age of the cow, her weight, the number of calves she has borne, the date of last calving, and the date of service, if bred.

THE BASIS OF AWARDS

should be as follows :—

For every pound of solids, not fat, two points, equal to two cents per pound, or twenty-two cents per hundred for skim milk.

For every pound of fat, thirty-two points, equal to two cents per ounce, or forty cents per pound of butter.

For every twenty days from calving, one point.

For every twenty days of gestation, dating from last service, one point.

Two points for every pound of solids, not fat, is equal to twenty-two cents per hundred for an average quality of skim milk ; one cent per ounce of fat, by Babcock machine, equals twenty cents per pound of churned butter ; and every quarter cent extra for an ounce of fat equals five cents per pound on butter.

HOW TO APPLY IT.

Find the weight of milk by weighing ; then take the specific gravity of the milk at a temperature of sixty degrees with a Quevenne lactometer. Test a sample of milk by the Babcock machine for fat, and calculate results as follows :—

32 pounds of milk ;

4.10 per cent fat ;

1.033 specific gravity.

Total solids = $\frac{1}{2}$ specific gravity added to $\frac{1}{5}$ of the fat, thus :

Solids, not fat.	Fat.	S. G. 1.033	.5165
.32	.32	Fat 4.10 $\div$ 5	.802
9.08	4.10	Equals total solids,	13.185
<u>256</u>	<u>32</u>	Less fat,	4.10
2.88	128		<u>9.08</u>
2 905	1.312 = Solids not fat		<u>5.80</u>
32 pounds milk, 9.08 solids, not fat, 2.9 pounds $\frac{1}{2}$ $\times$ 2,			41.94
32 pounds milk, 4.10 fat = 1.312 $\times$ 32			3.00
Days since calved, 60			2.45
Gestation, 49			<u>52.19</u>
Total			

THE BABCOCK FAT TEST APPLIED IN CHEESE-MAKING.

AN ILLUSTRATION OF VALUE IN BUSINESS EXPERIENCE.

Batch.	Pounds of Milk.	Per Cent of Fat.	Pounds of Fat.	Pounds of Cheese.	Pounds of Milk for One Pound of Cheese.	Pounds of Cheese for One Pound of Fat.	Price per Pound.	Value.
1	9,277	3.9	361.80	935.00	9.92	2.58	10 $\frac{1}{2}$	\$95 83
2	8,025	3.8	304.95	783.25	10.24	2.56	10 $\frac{1}{8}$	79 78
3	5,400	3.7	199.80	515.25	10.48	2.57	10 $\frac{1}{4}$	52 16
4	12,900	3.6	463.12	1,220.50	10.56	2.63	10 $\frac{1}{6}$	122 81
5	11,200	3.5	892.00	1,049.25	10.67	2.67	10	104 92
6	16,835	3.4	572.19	1,554.50	10.82	2.71	9 $\frac{1}{2}$	154 47
7	7,700	3.3	254.10	66.75	10.89	2.78	9 $\frac{3}{8}$	69 79
8	9,733	3.2	311.45	881.75	11.03	2.83	9 $\frac{1}{4}$	86 51

ANOTHER EXAMPLE.

TAVISTOCK FACTORY, 1892.

Batch.	Pounds of Milk.	Per Cent of Fat.	Pounds of Fat.	Pounds of Cheese.	Pounds of Milk for One Pound of Cheese.	Pounds of Cheese for One Pound of Fat.	Price per Pound.	Value.
1	500	3.20	16.00	45.12	11.05	2.82	10 $\frac{1}{2}$	\$4 96
2	500	3.30	16.50	46.19	10.82	2.72	10 $\frac{1}{8}$	5 08
3	500	3.60	18.00	48.37	10.33	2.68	11	5 32
4	500	3.80	19.00	51.00	9.80	2.68	11	5 61
5	500	4.00	20.00	52.62	9.50	2.63	10 $\frac{1}{2}$	5 72
6	500	4.10	20.50	52.75	9.47	2.57	11 $\frac{3}{8}$	5 80
7	500	4.30	21.50	54.90	9.10	2.55	11	6 03
8	500	4.50	22.80	56.73	8.81	2.49	11	6 24

Write Cornish, Curtis & Greene Manufacturing Company, Fort Atkinson, Wis., for Babcock machine, or J. B. Johnson, Boston Dairy Supply, 50 Commercial Street, Boston.

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